with stage IV metastatic non-small cell lung cancers. All patients have been prospectively registered with clinical TNM staging. Patients were found with N0-1 and N2-3 status in 34% and 66%, respectively. Two hundred and twenty patients (56%) were classified T1-2, while 172 were found T3-4 (44%). Interestingly 13% of the patients were found T1-2N0.

Conclusion: T and N descriptors by themselves seem to be bad predictors of metastatatic disease in non-small cell lung cancer.

P1-064 **Imaging and Staging Posters, Mon, Sept 3**

Correlation with Dual time PET-CT and enhanced CT in evaluation of mediastinal metastatic nodes

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Objectives: The purpose of our study was to compare the diagnostic efficacies of helical dynamic CT and integrated PET/CT for the prediction of mediastinal nodal metastasis in stage below IIIB non-small cell lung cancer (NSCLC).

Patient and Methods: Sixty one patients (M: F = 48:13, age range 41-79) with NSCLC underwent lobectomy or pneumonectomy were included. In enhanced CT, the diagntostic criteria of metastatic mediastinal nodes were over 10mm (measured by short axis) lymph node without definite calcifications. In integrated PET/CT, nodes were regarded as positive for malignancy when they showed over 2.5 (in 1 hr) in maximum standardized uptake value with a discrete margin and more 18F-FDG uptake than mediastinal structures. And the retention index was acquired by this equation RI (Retention Index) = (SUV 1h-SUV2h)x100/SUV 1h Sensitivities, specificities, and accuracies for mediastinal nodal metastasis detection were compared with enhanced CT and integrated PET/CT, histopathologic results.

Results: Of the 61 patients, 23 (37%) had positive mediastinal nodes. The sensitivity, specificity for mediastinal nodal metastasis prediction on enhanced CT by size criteria alone were 72%, 69%, respectively, whereas those on integrated PET/CT were 92 %, 97% by determined the initial SUV and retention index.

Conclusions: In NSCLC (operable cases, staege, I, II IIIA), preoperative nodal staging by contrast enhanced CT scan, but mediastinal nodal metastasis than PET/CT, whereas PET/CT shows excellent specificity and sensitivities

P1-065 **Imaging and Staging Posters, Mon, Sept 3**

Prognostic significance of thin-section CT findings in small-sized lung adenocarcinoma

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Background: The purpose of this study is to evaluate the prognostic importance of thin-section CT (TS-CT) findings in small-sized lung adenocarcinomas.

Methods: We reviewed TS-CT findings and pathological specimens from 359 consecutive patients who underwent surgical resection for peripheral lung adenocarcinomas smaller than 20 mm in diameter during the period from July 1997 to May 2006. By using TS-CT images, tumors were defined as air-containing types if the maximum diameter of tumor opacity on mediastinal window images was less than or equal to half of that on lung window images, and as a solid-density type if the maximum diameter on mediastinal window images was more than half of that on lung window images. We compared TS-CT findings to pathological findings (lymph node metastasis, pleural invasion, vessel invasion, and lymphatic permeation) and prognosis. The following prognostic factors were analyzed by chi-square test and Cox proportional hazard model: age, gender, tumor size, pathological stage, TS-CT findings, histologic subtypes defined by Noguchi (Noguchi type), pleural involvement, lymphatic permeation, and vascular invasion.

Results: No pathological invasive findings or recurrence were found in patients with air-containing type tumors. Pathological invasive findings and recurrence were found in 10% to 30% of patients with solid-density type tumors. The air-containing type on TS-CT and Noguchi type A or B were demonstrated as prognostic factors for good outcome by chi-square test ($p<0.001$). Multivariate analyses revealed lymphatic permeation as a significant prognostic factor.

Conclusions: The TS-CT findings were important predictive factors for postsurgical outcome in patients with lung adenocarcinoma.

P1-066 **Imaging and Staging Posters, Mon, Sept 3**

Image acquisition protocol to optimize image registration of lung cancer hyperpolarized helium-3 MRI and CT

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Background: Pulmonary imaging with hyperpolarized helium-3 (3He-MRI) is emerging as an alternative to SPECT that has the potential to provide superior lung function information. In particular, ventilation and perfusion data from 3He-MRI may be used for functionally weighted intensity modulated radiotherapy (IMRT) lung planning [1]. The aim of this study was to develop and evaluate an improved protocol for image registration of 3He-MRI to treatment planning x-ray CT.

Methods: An initial six NSCLC patients underwent 3He-MRI with a radiofrequency coil that required the patients to be imaged supine with their arms down, and a free breathing single-slice CT protocol for treatment planning. The 3He gas was polarized on site to 30% and imaging was performed during a single 14s breath-hold of a 300ml 3He/700ml N2 mixture. Following the development of an elliptical birdcage 3He-MRI coil [2] and the installation of a 16-slice CT, a further six patients were scanned. A new protocol was devised that enabled 3He-MRI to be acquired in treatment position and a planning CT to be acquired during an inspiration breath-hold performed with a 1L bag filled with room air that simulated the 3He-MRI breathing maneuver. For all images, 3He-MRI to CT image fusion was performed using anatomical landmark based rigid registration which was assessed using the relative volume overlap [1].

Results: Over all slices, the original 3He-MRI and CT were registered with (mean±SD) overlap 73±11%. With the new equipment and modified imaging protocol, the overlap was significantly improved to 84±4% ($p=0.05$).